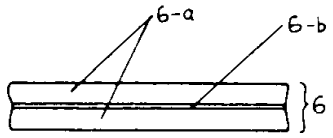
(54) **ANTI-MAGNETISM PLATE FO[redacted]ECTRONIC CLOCK**
(11) **55-158580 (A)** (43) 10.12[redacted] (19) JP
(21) Appl. No. 54-66604 (22) 29.5.1979
(71) SUWA SEIKOSHA K.K. (72) NOBUO ISHIKAWA
(51) **Int. Cl³. G04C3/00,H02K5/00/G12B17/02**

PURPOSE: To improve the resistance to an AC magnetic field of a motor-carrying electronic clock, by employing therein an anti-magnetism plate consisting of a lamination of a plurality of sheets of a material having a high magnetic permeability with an insulating film inserted therebetween.

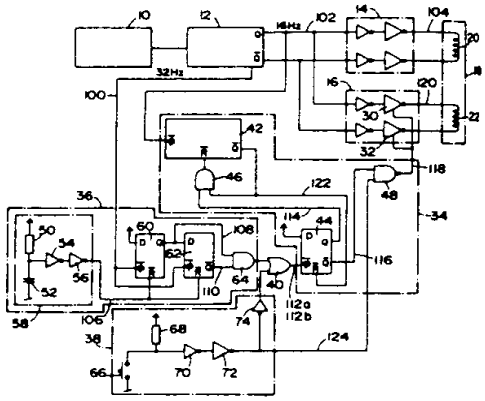
CONSTITUTION: Sheets 6-a of a material having a high magnetic permeability and an insulating film 6-b are laminated, and the resulting product is used as an anti-magnetism plate for preventing a magnetic field from being applied to a motor in an electronic clock from the outside. When an AC magnetic field is applied to such an anti-magnetism plate of a laminated structure, outer and inner portions of the two layers 6-a, each of which consists of a permalloy, etc. remain to be highly permeable in magnetism. A total thickness of such portions of the layers 6-a that remain to be highly magnetically permeable is greater than the thickness of similar portions of an anti-magnetism plate which is a solid sheet material having a high magnetic permeability. Accordingly, the resistance to an AC magnetic field of an anti-magnetism plate based upon this invention can be equivalently increased.



(54) **SYNCHRONOUS MOTOR DRIVING UNIT FOR CLOCK**
(11) **55-158581 (A)** (43) 10.12.1980 (19) JP
(21) Appl. No. 54-65937 (22) 28.5.1979
(71) RHYTHM TOKEI KOGYO K.K. (72) NOBUYUKI HORII
(51) **Int. Cl³. G04C3/14,H02P8/00**

PURPOSE: To furnish a synchronous motor driving unit for a clock with a sufficient self-starting capability by employing a motor driving coil consisting of a synchronous driving coil member and a starting coil member, and using the former coil member for synchronously rotating a motor in an ordinary manner with a small torque and the latter coil member for starting the motor with a large torque.

CONSTITUTION: When a power source is turned on, a start detecting signal is output from an AND-gate 64 of a start controlling signal generating circuit 36. As a result, a driving pulse array of 16Hz is supplied to a second driving coil 22 for a period of time set by a counter 42 forming a timer circuit in a start controlling signal generating circuit 34, while a large combined torque from a start-driving coil consisting of drive coil members 20, 22 is supplied to a rotor. A synchronous motor then continues to be rotated stably at a constant speed with a small torque of the first drive coil member 20 constituting a synchronous driving coil member. When indicating pointers start to run, a large torque is supplied to the rotor in the same manner as in a case where a clock is started.

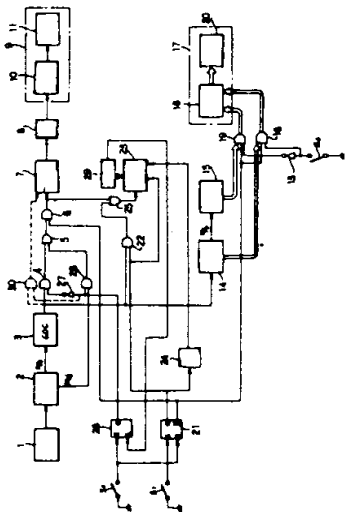


10: reference signal generator, 12: frequency dividing circuit

(54) **ELECTRONIC CLOCK**
(11) **55-158582 (A)** (43) 10.12.1980 (19) JP
(21) Appl. No. 54-66378 (22) 29.5.1979
(71) CASIO KEISANKI K.K. (72) MASAMITSU KOSAKA
(51) **Int. Cl³. G04C9/08,G04C3/00**

PURPOSE: To obtain a power-saving, trouble-free electronic clock by providing the clock with a means for stopping a stepping motor and a means for setting time by quickly rotating the stepping motor when the motor stopping mechanism is released.

CONSTITUTION: An output from a flip-flop 21, which is set by a power-saving switch S_1 and reset by a release switch S_2, is input into an up-down counter 23. An input pulse to a stepping motor 8 is controlled by an output from a flip-flop 26, which is set by the release switch S_2 and reset by an output from a zero detecting circuit 29 in the up-down counter 23. When the power-saving switch S_1 is depressed, a driving pulse for the stepping motor 8 is stopped being supplied thereto, and the driving pulse is then supplied to the up-down counter 23. When the release switch S_2 is depressed, the stepping motor 8 is quickly rotated in accordance with a counted value in the up-down counter 23. As a result, the time which has elapsed while power is unused is recovered.



1: oscillation, 2: frequency dividing, 7: driving circuit, 10: wheel train mechanism, 11: indication pointer section, 14: time system counting circuit, 15: calender system counting circuit, 17: digital display section, 18: decoder driver, 24: single shot circuit